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CODE OF PRACTICE FOR REPAIR OF DAMAGED HOT-DIP GALVANIZED COATINGS

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CODE OF PRACTICE FOR REPAIR OF DAMAGED HOT-DIP GALVANIZED COATINGS

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Indian Standard

CODE OF PRACTICE FOR REPAIR OF DAMAGED HOT-DIP GALVANIZED COATINGS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 18 August 1986, after the draft finalized by the Hot-Dip Sprayed and Diffusion Coatings Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 This standard has been prepared for giving guidance to the galvanizers and fabricators, regarding the methods, that may be employed to repair damaged hot-dip galvanized coatings on structural parts, assemblies and other hardware. Damage may occur by burning during welding and flame cutting, or due to excessive rough handling during shipping, and erection.

1. SCOPE

1.1 This standard describes the procedure for repair of damaged hot-dip galvanized coatings by the following three methods:

a) use of low melting point zinc alloy repair rods or powders,

b) use of zinc-rich paint, and

c) use of metallized (sprayed) zinc coatings.

1.2 The choice of the repair method, as well as the extent of repair that may be carried out to the damaged area, shall be mutually agreed to between the contracting parties.

2. MATERIAL USED FOR REPAIR

2.1 Material Characteristics — The materials used for repair of coatings, should have the following characteristics.

2.1.1 A single application of the material should provide a coating thickness of 25-50 μm.

2.1.2 The applied coating should be anodic to the steel base and should provide protection.

2.1.3 It should be possible to apply the coating material under shop or site condition.

2.2 Material Types — The following three types of materials may be used to repair damaged coatings.

2.2.1 *Zinc-Based Solders* — Zinc-cadmium and zinc-tin-lead alloy solders, having liquidus temperatures in the ranges of 270 to 275°C and 230 to 260°C respectively, in the form of rods or as powders may be used.

2.2.2 *Zinc-Rich Paints* — Pre-mixed type paint, based on organic/inorganic binders specially formulated for steel surface may be used. The dried film should contain a minimum of 92 percent zinc dust by mass.

2.2.3 *Sprayed Zinc* — This method involves the application of a zinc coating by spraying the surface to be repaired with droplets of molten metal, using wire or ribbon, or powder processes (*see* IS : 6586-1972*).

3. REPAIR PROCEDURES

3.1 Repair Using Zinc-Based Alloys

3.1.1 Clean the surface by means of a wire brush or mild blasting. Surface preparation should extend into the neighbouring undamaged coating so as to ensure a smooth and continuous coating after repair.

3.1.2 If the damaged area includes welds, all flux residues and weld spatters should first be removed by chipping.

3.1.3 The cleaned area should be pre-heated to at least 315°C, but over-heating beyond 400°C shall be avoided. Care should be taken to ensure that the surrounding coating is not burnt during heating. The damaged surface should be wire-brushed during pre-heating.

3.1.4 The cleaned and pre-heated area should be rubbed with the rod of the zinc alloy to deposit an evenly distributed alloy layer. Powdered zinc alloys should be sprinkled on the cleaned and pre-heated surface and spread out with a spatula.

3.1.5 After effecting the repair, flux residues should be removed by rinsing with water or wiping with a damp cloth.

3.2 Repair Using Zinc-Rich Paints

3.2.1 Surfaces to be reconditioned with zinc-rich paint shall be clean, dry and free of oil, grease and corrosion products.

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*Recommended practice for metal spraying for protection of iron and steel.

3.2.2 Areas to be repaired shall be blast-cleaned with grit or sand or power ground to bright metal. Surface preparation should extend into neighbouring undamaged coating area. Flux residues and weld spatters shall be removed by chipping.

3.2.3 The zinc-rich paint shall be applied to the cleaned and prepared area by spraying or by means of a brush. The paint should be applied, according to the paint manufacturer's recommendations, in a single application employing multi-spray passes to achieve the required dry film thickness, which shall be agreed upon between the contracting parties.

3.2.4 Storage precautions and the method for use of zinc-rich paints should be as per the recommendations of the paint manufacturer.

3.3 Repair Using Spray Zinc

3.3.1 Surfaces to be repaired by zinc spraying shall be clean, dry and free of oil, grease and corrosion products.

3.3.2 If the area to be reconditioned includes welds, all flux residues and weld spatters should first be removed by means of chipping. The surface should be blast cleaned with grit or sand or power ground to white metal, and the surface preparation should extend into the surrounding undamaged galvanized coating area.

3.3.3 The coating should be applied to the clean and dry surface by means of metal-spraying guns, fed with either zinc wire or zinc powder (*see* IS : 6586-1972*). The coating should be applied immediately after surface preparation and before visible deterioration of the surface has occurred.

3.3.4 The surface of the sprayed coating should be of uniform texture, free of lumps, coarse areas, and loosely adherent particles.

4. INSPECTION

4.1 Thickness of Coating — Coating thickness/mass, applied by the methods mentioned in **3.1**, **3.2** and **3.3** should match the thickness and mass of the zinc coating in neighbouring areas and shall be measured by means of magnetic and electromagnetic gauges.

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*Recommended practice for metal spraying for protection of iron and steel.

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